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## **Delivering Sport Science and Sport Medicine Services to Regional, Rural and Remote Athletes in New South Wales**

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### **Abstract**

This paper presents a case study that describes how the Northern Inland Academy of Sport (NIAS) has provided sport physiotherapy, sport psychology, and sport nutrition to young athletes living throughout the vast north-west region of New South Wales (NSW). NIAS is a NSW regional academy that commenced in November 1992. Each year, it offers 150-180 scholarships to talented adolescent athletes aged between 14-18 years of age. These 12-month scholarships provide these country athletes with specialist sport skills training; introductory sport science, sport medicine and sport media training; specialist physiological testing; and sport competition including participation in the multi-sport Inter-Academy Games. But how do you provide sport science and sport medicine services to 150-180 adolescent athletes spread across over 98,000 km<sup>2</sup> of north-west NSW? Prior to 2003, NIAS approached this in an orthodox manner and used a centralised sport-specific program. This situated sport science and sport medicine training within weekend training camps that NIAS sports squads held three times each year. This approach was based on recommendations from the Australian and international sports literature and the NSW Institute of Sport (NSWIS) service delivery-model for Tier-3 squad sports. This approach focused on cost-efficiency and provided adequate results. But we were dissatisfied with how it serviced country athletes. In response we developed a new program called Regional Athlete Coach Education (RACE) in 2003. RACE is unique because it privileges the efficacy of servicing country athlete and their families above the costs involved in delivering such a program. RACE regionalises

sport science and sport medicine training via professionals travelling to country towns and giving hands-on, mid-week, evening presentation to NIAS athletes and their families, friends, coaches and teachers. RACE is unique as it is about decentralising services, and was developed for features that are characteristic of the New England and North West Region of NSW. The practical implication of this paper is that providing country athletes with sport science and sport medicine services does not need to be expensive, but it needs to be innovative.

The professional implication is that servicing regional, rural, and remote athletes involves more than service delivery innovation, such as in just travelling to country towns. It also requires conceptual innovation and technical innovation of sport science and sport medicine knowledge and skills so to match with the life-issues and generational issues of adolescent athletes living in regional, rural, and remote Australia.

### **The Presenting Problem**

How do you provide sport science and sport medicine services to young athletes who are living in regional, rural, and remote communities? A typical answer might be in the most cost-effective manner possible. But this typical answer glosses over the inherent difficulties that country athletes and coaches face in accessing specialist sports services. It glosses over the difficulties that sports administrators face in trying to deliver sport science and sport medicine services to country athletes.

Implicit in such a response is the recurrent difficulties that people who are living in regional, rural, and remote communities face in accessing specialist services, such as in health, education, finance-banking, and other domains.

One feature of this type of the response, in the most cost-effective manner possible, is that it gives primacy to the costs of delivering specialist sports services to regional, rural, and remote athletes. That is, by producing a cost-effective or cost-efficient reply, a respondent is making the economic considerations the primary consideration in delivering sport science and sport medicine services. Consequently the efficacy considerations and anticipated outcomes that might come from such a program become the secondary concerns.

Why does a cost-efficient response give precedence to costs over efficacy? There are at least three reasons for justifying this claim, namely; grammatical features, social practices, and methodological complexities. Let us briefly expand on these three reasons in order to build the case that the presenting problem, how do you provide sport services to regional, rural, and remote athletes, is dominated by considerations about how much it is going to cost rather than what outcomes could be accomplished from such a program.

Firstly, the term cost-effective is grammatically constructed to put the word costs before the term effectiveness. Consider how we would normally use this term, or equivalent phrases such as cost-efficient and cost-benefit. It is typical for a speaker (or a writer) to produce the word costs before uttering the word effectiveness, or similar terms. So considering cost-effective from a grammatical or linguistic stance shows that we typically preference costs over effectiveness. So something as simple as how we would normally use a term signals a speaker's priority or preference.

Secondly, in contemporary Australian society we have adopted a familiar social position when providing services to regional, rural, and remote communities (e.g., roads, telecommunications, water, and other infrastructure). This familiar social view, that is displayed privately and in the public domain, is that providing services to regional, rural, and remote communities is a costly endeavour. So at a social or societal level, we typically take up a starting position that any infrastructure or program development undertaken for regional, rural, and remote communities will most likely be a costly exercise.

Thirdly, methodologically it is more difficult to measure the efficacy of an intervention program than to account for the financial costs and other human resources used to produce it. So when a sports administrator is required to account for a sports program it is much easier for them to deal with how funds have been acquitted rather than to design and implement a methodology for measuring what the program has accomplished. Evaluating reactions, learning, behaviour change, or the results and outcomes of an intervention project is a complex methodological activity (Kirkpatrick, 1994).

So a controversial but nonetheless important starting point for considering the issue of providing sport science and sport medicine services to athletes living in regional, rural, or

remote parts of Australia is to acknowledge that costs tend to dominate efficacy considerations in most cases.

The first part of this paper describes NIAS and displays some features that characterise the New England and North West Region of NSW. In the second part of the paper we briefly acknowledge the contribution that country athletes have made to Australia's rich sporting heritage. Thirdly, we describe our experiences in developing and implementing a basic sport science and sport medicine program for NIAS athletes over the past seven years. Central to the NIAS RACE program has been putting efficacy before the costs of the program. Fourthly, we display our reactions to the question; so what is innovative about the NIAS RACE program for delivering basic sport science and sport medicine services to regional, rural, and remote athletes? Finally, we close the paper with some comments about applying this work outside of north-west NSW.

## NIAS and North West NSW

NIAS is one of ten regional sports academies located throughout NSW. These regional academies are fully incorporated, autonomous, and community-based organisations that are administered by a Board of (unpaid) Directors who are members of the local community. Each academy receives an annual operation grant from NSW Department of Sport and Recreation (NSW DSR), and then supplements this with sponsorship and fundraising activities to run various sport development programs.

NIAS commenced in November 1992 and has two paid employees, an Executive Officer, Peter Annis-Brown the first author of this article, and a Sports Administration Officer. NIAS offers between 150-180 scholarships to talented adolescent athletes aged between 14-18 years who live in the New England and North West region of NSW each year.

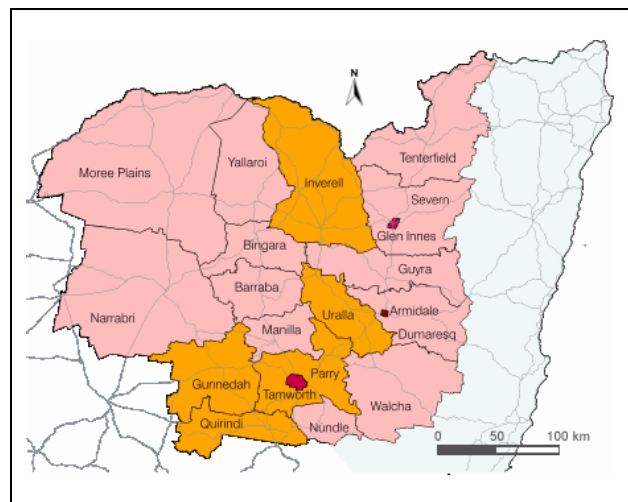


Figure 1: New England & North West Region of NSW

Adolescent athletes are offered a NIAS scholarship on the basis that they apply, submitting a resume of their sporting, school and community accomplishments, and that they are

recognised as talented and conscientious young athletes by their local teachers and community sport coaches. A panel comprising of the Executive Officer, the respective NIAS head coach, and one Board Member select successful scholarship recipients from these applications for each sport program. These scholarships are for 12-months duration and provide opportunities for: (a) specialist sport skills training; (b) introductory sports medicine, nutrition, psychology and media training; (c) physiological testing conducted by the Sydney Academy of Sport mobile-testing laboratory; and (d) a short competition program, including participation in the Academy Games<sup>1</sup>.

Notwithstanding this activity, NIAS is a small organisation. In 2006, NIAS received an annual grant of \$130K from NSW DSR and worked with an annual turnover of approximately \$800K to provide ten different sports programs for athletes living in this large and sparsely populated region of NSW.

The north-west region of NSW has a population of a little over 180,000 people that are spread across an area of over 98,000 km<sup>2</sup> (see Figure 1 for a map of the region covered by NIAS). This region has a population density of between 0.5-1.1 persons per km<sup>2</sup> for most of the region, and between 1.1-2.8 persons per km<sup>2</sup> for some central areas. It includes three larger population centres in Glen Innes, Armidale, and Tamworth (NSW Government Department of Planning, 2005). Table 1 displays some of the key geographical and demographic characteristics of this region.

Table 1: Geo-demographic Characteristics of the New England and North West Region of New South Wales<sup>2</sup>.

Characteristics	
Area	98,606 km <sup>2</sup>
Population	180,576
Northern border	Tenterfield
Southern border	Quirindi
Western border	Walgett
Eastern border	Ebor

But when this region of NSW is compared to Europe or North America, the area serviced by NIAS is equivalent in size to Greece or Oregon. Greece and Oregon each have population densities of 81 persons per km<sup>2</sup> and 35.6 persons per km<sup>2</sup>, respectively (Wikipedia, 2007). When compared to the area serviced by NIAS, this large area of NSW is closer to Alaska (0.42 persons per km<sup>2</sup>) in North America, and to Namibia (2.2 persons per km<sup>2</sup>) in Southern Africa (Wikipedia, 2007) in population density than to Greece or Oregon.

<sup>1</sup> The Academy Games is a 3-day multi-sport competition involving athletes from New South Wales and Victoria regional sports academies. The event is currently staged on the NSW central coast.

<sup>2</sup> Australian Bureau of Statistics 2001 Census (NSW Records)

## Australian Athletes from the Country

Athletes from regional, rural, and remote areas have made a significant contribution to Australia's sporting success and rich sporting heritage (e.g., Don Bradman, Evonne Cawley [nee Goolagong], Greg Norman, Cathy Freeman, Glenn McGrath). Abernethy (2005) argues that Australian regional, rural, and remote athletes are disproportionately represented in elite athlete ranks. That is, these groups of athletes are overrepresented when considering the population, services, and resources of their home towns. Thus their representation and influence is far greater than what would be expected given their access to specialist services, support, and competition. However this is far from a unique Australian phenomenon. Côté and his colleagues have pointed to the disproportionate success of athletes from regional, rural, and remote areas in the United States and Canada across a range of sports (Côté, Macdonald, Baker, & Abernethy, 2006).

Returning to the Australian context, Abernethy (2005, 2006) refers to the success of Australian athletes from regional, rural and remote locations as the Wagga-effect. He found that elite athletes from regional, rural, and remote areas have typically played many different sports before settling into their chosen sport, competed in multi-age and adult competitions from a young age, and were discouraged from an early or premature specialisation in one sport (see also Abernethy, Côté, & Baker, 2002). Abernethy argues that the above may be part of the reason for the regional, rural, and remote success story. These aspects are also recurrent themes in Coates' (2005) book on raising (Australian) champions, and Atkinson's book on great Australian Olympians (Atkinson, 1999).

## Delivering Sport Science & Sport Medicine

The NIAS sport science and sport medicine program is marked by two different phases that display how we have understood and approached the problem of providing basic sport science and sport medicine to adolescent athletes living in regional, rural, and remote NSW. The first phase of the program occurred prior to 2003 with the second phase of the program from 2003-2007.

This initial phase of the sport science and sport medicine program incorporated three main features. Firstly, it focused on basic sport science and sport medicine topics. These were customised to include sport-specific explanations, examples, and activities. Secondly, these topics were introduced via orthodox group presentations that used standard psycho-educational methods and practices. Thirdly, the presentations were delivered to athletes during the sport-specific squad training camps that were held on two or three weekends during the year. So, for example, sport-specific presentations were delivered to rugby players at Lake Keepit<sup>3</sup>, to softball players at Tamworth State High School, and to swimmers at The Armidale School. These NIAS squad camps typically involved morning and afternoon training sessions with the sport science and sport medicine presentations sandwiched

<sup>3</sup> The Lake Keepit Sport and Recreational Centre is located in Lake Keepit State Park between Tamworth and Gunnedah. It is managed by the NSW Department of Sport and Recreation.

into the busy program either before or after dinner on Saturday night, or perhaps after lunch on Sunday afternoon.

Furthermore, the initial phase of the NIAS program was shaped by two key features. Firstly, those orthodox practices that were recommended in the professional literature for providing sport science and sport medicine to adolescent athletes (e.g., Martens, Christina, Harvey, & Sharkey, 1981). Secondly, the NSWIS service delivery model for disseminating sporting knowledge and skills to NSWIS Tier-3 Squad-sports. Prior to the 2000 Olympic Games, NSWIS classified those sports involving adolescent pre-elite athletes as Tier-3 Squad-sports and provided a sport-specific group-based intervention program delivered during training camps and other training events.

We recognised early that providing elementary sport science and sport medicine services to NIAS athletes would be complicated by several issues related to the tyranny of distance. For instance, an obvious issue was how to provide specialist sports services to approximately 150-180 adolescent athletes who came from such a large geographical area. A second issue was that these NIAS athletes were scattered sparsely across this region without a critical mass of athletes from any one sport being located in any one particular area. Specialist sport personnel were also not widely distributed throughout the region. So a third limiting factor was the availability of sport science and sport medicine expertise in north-west NSW. For instance, there is no psychologist with specialist training in sport psychology living and working in the New England and North West Region of NSW.

So it seemed reasonable to us at the time, that the most practical and logical approach was for the NIAS sport science and sport medicine program to draw on recommendations from the Australian and international literature and the delivery system that had been successfully used by NSWIS to overcome the tyranny of distance in servicing NIAS athletes.

### **Preparing and Delivering an Alternative**

However in 2002 we began to feel uneasy about the NIAS sport science and sport medicine program. This uneasiness grew from the positive evaluations that we had received from NIAS athletes and coaches. These positive reviews showed that participants found the sport science and sport medicine presentations interesting and helpful. But while these formal evaluations were positive, our informal discussions with the coaches signalled that time, travel and timetabling issues constrained what they could accomplish at these squad training camps. This was an issue for coaches because the squad training camps were held at the weekend but occurred only two or three times a year. This meant that a 12 month program of specialist sport skills training, introductory sports medicine, nutrition, psychology and media training, and any physiological testing needed to be covered in six to eight days of face-to-face contact with NIAS athletes. Consequently, the time constraints operating on NIAS coaches were limiting what they felt could be accomplished in a 12-month NIAS sports scholarship. This created a tension between providing specialist coaching and providing sport science and sport medicine training. And a better balance between these two needed to be found.

Secondly, parents seemed to be a forgotten resource. Parents were typically absent from the camps. They may have driven anywhere between one and four hours to get their son or daughter to the camp, and then turned around and driven home again, or simply gone shopping for goods and services not easily found in their own home town. The NIAS parents were inadvertently side-lined and detached from the athlete development process. This affected the sport science and sport medicine components of the scholarship as parents were not aware of what and how they could help to foster better sports practices.

Thirdly, we quietly began questioning whether the NSWIS service delivery model was adequate for meeting the unique issues associated with delivering sport science and sport medicine to adolescent athletes living in the New England and North West Region of NSW. As coaches, administrators and support staff, we felt that there was a bad fit between what we wanted to achieve in north-west NSW, and how this might be accomplished if we were working with athletes in Sydney.

Our ensuing discussions led to planning a new sport science and sport medicine program in late 2002 and implementing it in 2003. This second phase program was labelled the NIAS Regional Athlete Coach Education (RACE) program. RACE introduced a new approach for delivering sport medicine, sport nutrition, sport psychology, and media training to adolescent athletes living in north-west NSW. Table 2 displays the schedule for the first year of the NIAS RACE Program.

Table 2: 2003 NIAS RACE Program

Date	Town
29 April	Armidale
30 April	Tamworth
19 May	Glen Innes
20 May	Inverell
21 May	Moree
22 May	Narrabri
17 June	Gunnedah
18 June	Tamworth
19 June	Armidale
12 August	Tamworth
13 August	Armidale

### **Constructing NIAS RACE**

The centre-piece of the NIAS RACE program was delivering sport science and sport medicine knowledge and skills on a town-by-town rather than the previous squad-by-squad delivery basis. So sport science and sport medicine topics would be presented in a country town near where the athlete, and his or her family, lived rather than at a busy weekend squad camp. RACE presentations were scheduled mid-week and during the evening to limit conflicts with other commitments that NIAS athletes and their families might have. Additionally, RACE presenters typically make themselves available for questions and mini-consultations with athletes and their families after their presentations. They do this by either staying-back after their presentation or by

staying overnight in that country town and talking with an athlete and his or her family on the following day.

This innovation involved departing from the NSWIS Tier-3 dissemination model, where topics were delivered via sport-specific group presentations during squad training camps. Embedded in this town-based delivery system was an explicit action to invite and include the athlete's family, friends, and their local community<sup>4</sup> to the RACE presentations. In this way the NIAS RACE program serviced not only the athlete and their immediate family but also their wider local community. This was founded on the premise that when athletes leave their communities for higher levels of competition they often take with them skills and knowledge they have gained from being a talented athlete. Whilst these athletes may leave behind memories and a potential sense of community pride for having done so well, they often take away more than they leave behind. The NIAS RACE program explicitly intended to leave behind skills and knowledge in regional, rural, and remote communities that could benefit a whole community rather than just one or two talented individuals.

### **Putting Efficacy First**

So how did we put efficacy before costs in the NIAS RACE program? Now this is a somewhat complicated manner and we are unlikely to do it sufficient justice by talking about it in this short paper. But what we are able to sketch out are some of the key features that started and have maintained our action to preference the efficacy of RACE over costs.

Firstly, the planning and implementation process was not linear. It did not have the orderliness and organisation of a recipe for cooking pumpkin scones, or a set of instructions for installing software onto a computer. Instead it was circular and occasionally chaotic, as some matters needed to be revisited and thrashed over again and again. For example, determining what time of the year to hold RACE presentations was a difficult problem to solve. It was complicated by many factors such as the: dates of school holidays, including those of Boarding Schools in the region that held a slightly different school calendar; the competition schedules for summer and winter sports; dates of Agricultural Shows and Country Fairs; typical harvest and planting times for farmers, and the dates of State and National Age Championship tournaments. Table 2 and Table 3 show, for instance, how we since have adjusted the dates of RACE presentations to better fit-in with athletes and their families.

Planning NIAS RACE involved a circular process as we sometimes needed to go over partially resolved matters and revisit some thorny issues. A key point for readers to note in understanding the disclosures displayed in this section is that by putting aside those orthodox practices recommended by the sport science and sport medicine profession and the NSWIS Tier-3 service delivery model, as we did, we then had no guiding framework for planning a large-scale intervention program. This is because there is a gap in the professional

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<sup>4</sup> Local mayors, school children and athletes who are not NIAS scholarship holders, and local business owners have been some of the community members who have attended the RACE workshops.

literature on how to service regional, rural, and remote athletes with basic sport science and sport medicine knowledge and skills. Our search of Australian and international databases provided us with no conceptual framework or operational plan for developing an alternative approach. In fact, the professional community is only beginning to recognise and become interested in the Wagga-effect (e.g., Abernethy, 2005, 2006; Côté, et al., 2006). And so, to date, there has been no concerted interest in providing an alternative to the orthodox service delivery model.

Notwithstanding this however, some key milestones in the planning process included, firstly, the Executive Officer, Peter Annis-Brown making NIAS RACE a priority. That is, Peter wanted to develop a better sport science and sport medicine program for NIAS athletes. A program that was at least comparable to what adolescent athletes would receive if they were on scholarship at a Sydney-based academy of sport. So a key milestone was the NIAS Executive Officer committing himself to prioritising effectiveness and then being willing to pay the price of what it might cost to achieve it.

A second milestone was to involve the second, third, and fourth authors of this paper in the project. Warren Ansell, Steven Christensen, and Gillian Woodward had played an important role in the initial NIAS sport science and sport medicine program. Each had been advocates and leaders of their respective disciplines - sport physiotherapy, psychology, and nutrition. So they each had a lot of local knowledge about NIAS, the New England and North West Region of NSW, and the strengths and shortcomings of the original sport-specific and training-camps based program from their previous experiences in that program. By accepting Annis-Brown's invitation to become involved each displayed a commitment to the new project. Secondly, they made discipline-specific and region-specific information available to help solve this complex problem-solving task. Peter subsequently treated each as a discipline-specific coordinator and charged them with the task of developing a portable, discipline-specific, but sports-general presentation that could be delivered in country towns throughout north-west NSW.

This delegating action produced a number of similar responses by these coordinators. For instance, Powerpoint presentations were developed for each discipline, and additional speaker notes and participant information sheets were developed for each discipline. But it also produced a number of distinct and discipline specific actions. For instance, sport dietitian Gillian Woodward developed a network of dietitians who were working and living throughout the New England and North West Region of NSW (often working for NSW Health) and trained them to deliver the NIAS sport nutrition presentation. So one unique initiative developed by the sport nutrition coordinator was to establish a supervisory consultation model of service delivery. This is similar to the model used by Smith and Johnson (1990) with US professional baseball.

Furthermore sport physiotherapist, Warren Ansell, developed a presentation on preventing sports injuries via preventative stretching, warm-up, warm-down, and self-massage activities. However he marked this work for sometimes restless

adolescent athletes by making it fun, hands-on and interactive. So one unique feature developed by the sports physiotherapy coordinator was to imbed active learning practices in this talk. So the NIAS injury prevention engaged athletes, coaches, and their families and friends at a tactile and proprioceptive level rather than solely at a visual or an auditory learning modality. While this notion might be familiar to sport physiotherapists, this familiarity does not guarantee that it becomes a common practice. So one unique initiative developed by the sport physiotherapist coordinator was to institutionalise active learning as a mainstream practice in RACE physiotherapy.

Similarly sport psychologist, Steve Christensen, re-oriented his sports discipline. He changed from emphasising the psychological skills that adolescent athletes should be using in their sport to reframe sport psychology as the mental equipment that athletes could choose to take to training and competition. Accompanying this innovation was actions to find small and inexpensive items that were readily available in country towns: small items that could symbolise mental equipment for sport. So a unique initiative developed by the sport psychology coordinator was to establish mental equipment as a tangible, concrete, cheap, and local entity.

Of course a program like RACE is not static and so the 2007 program has elements that are improvements from the program that was initiated in 2003. Each year, RACE has been reviewed, revised and redeveloped a part of a process of evolution and continual refinement. Further improvements are anticipated from a sport administration perspective and from a discipline-specific perspective. One illustration of this is Peter Annis-Brown finding a corporate sponsor for the RACE program in 2005. So Joblink Plus, a workplace employment services company, began an ongoing association with the RACE program. The financial sponsorship provided by Joblink Plus has helped to strengthen the effectiveness of the program and consolidate the costs in delivering it in north-west NSW.

### So what is Innovative about this?

At a first glance, the NIAS RACE program appears to be little more than a sport science and sport medicine road-trip where the sports dietitian, physiotherapist, and psychologist simply take to the open road. That is, the NIAS sports dietitian, physiotherapist, and psychologist bring sport science and sport medicine to a town near where an NIAS athlete lives by physically travelling to the town. And a passing glance at the 2007 NIAS RACE Program (see Table 3) would seem to confirm this view.

Table 3: 2007 NIAS RACE Program

Date	Town
30 April	Glen Innes RSL
1 May	Inverell RSM
2 May	Moree Services Club
3 May	Narrabri RSL
18 June	Armidale Bowling Club
19 June	Tamworth UNE
20 June	Gunnedah Services Club
21 June	Tamworth UNE

However we would argue differently. That is, we would argue that there is more to NIAS RACE than a sport science and sport medicine version of the American movies, *Thelma and Louise*, or *Wild Hogs*. Instead, our view takes a more circumspect view of the program. We would argue that any substantial reform in delivering sport science and sport medicine services to regional, rural, and remote athletes requires conceptual, technical, and service delivery system innovation. And NIAS RACE displays conceptual, technical, and service delivery system innovations in providing these services to country athletes.

### Conceptual, Technical, and Service Delivery Innovation: An Illustration.

The RACE sport physiotherapy presentation centred around two questions; what can you do to decrease your chances of injury? And, how can you help your body to recovery from training and competition? However three preliminary considerations framed how we approached presenting these questions and their answers to NIAS athletes.

Firstly, there was an acknowledgement that these are core sports medicine topics. Sports Medicine Australia (SMA) views sport safety and injury prevention as a national sports priority, in part, because injury and the fear of injury are perceived as barriers to participating in sport and physical activity (SMA, 2006 March, 2006 July). SMA believes that education programs that inform athletes, coaches, parents and sports officials about injury prevention and management makes sport safer for all participants (SMA, 2007). So by introducing NIAS athletes to injury prevention and recovery practices via RACE sport physiotherapy we believe that we can improve and safeguard their immediate and future sporting experiences.

Secondly, these are complex topics. The biological basis of behaviour that underpins our knowledge of neuromuscular fatigue and physiological adaptation to training and competition draws from a large empirical knowledge base. Abernethy and his colleagues point out that the biophysical foundations of human movement are complex and require an interdisciplinary understanding of human capability and motor behaviour that often takes many years to fully understand (Abernethy, Hanrahan, Kippers, Mackinnon, & Pandey, 2005). Similarly, conveying this scientific knowledge to adolescent athletes so that they are informed about warm-up, warm-down, stretching, and recovery practices is difficult, even for an experienced sport physiotherapist. It involves judgements about what knowledge to include and exclude from a sport medicine presentation and how to present this to adolescent athletes who may vary in their cognitive and maturational abilities.

Thirdly, it is a personal topic. In our experiences, talking with adolescent athletes about sports medicine invariably invokes them talking to us about their personal experiences with sporting injuries, growth-spurt conditions such as Osgood Schlatter disease and Severs disease, and the emerging issue

of adolescent overtraining and overreaching. The adolescent athletes that we talk with willingly share their sports medicine stories with us. Hassmen (2007) has recently pointed to the environmental and personal factors (e.g., high athletic identity, expectations, and strivings for self-worth) that increase the risk of developing overtraining syndrome and burnout among professional and amateur athletes and coaches. In our conversations with young athletes we have found that when talking about their personal experiences these stories are similar to the factors found in Hassmen's research. This signals to us that overtraining syndrome in regional, rural, and remote adolescent athletes is a dormant and largely misunderstood issue.

So our starting point for preparing a basic sport physiotherapy presentation to NIAS athletes was to understand that injury prevention and recovery are mainstream topics that are underpinned by a large biophysical knowledge base. And that this scientific knowledge needs to intersect with the lived experiences of adolescent athletes growing up in regional and rural towns and remote communities in north-west NSW. However we found one unexpected benefit from beginning in this way. And it was that examining these preliminary considerations helped us to consider some different ways of introducing sport medicine education to adolescent athletes and their families. We display two of these approaches, below. For convenience, we will refer to these as a traditional approach and contrast this with an alternative approach.

A traditional approach to sports medicine education would focus on the first two conditions that were listed earlier. That is, it would focus on core topics (e.g., injury prevention, recovery) as these are informed by a large biologically-based body of knowledge. This focus typically leads to a physio-centric approach to delivering these topics to an audience. This approach gives priority to the current state of sport medicine knowledge. It also gives priority to the abstract reasoning that is used to conduct sport medicine studies and to understand the empirical findings and interpretations from this research. Therefore, a traditional sports medicine presentation would be based on known scientific facts, which are displayed in an orthodox or academic-styled presentation using Powerpoint to deliver a predominantly visual and auditory talk to athletes. That is, it gives priority to the conceptual features of the sport medicine presentation over service delivery issues and instructional design considerations. The strength of this approach is that the work is based on evidence and is displayed using a coherent scientific framework. However a shortcoming is that it is often abstract and detached. That is, while it may be strongly grounded in science, this alone does not guarantee strong links with an audience who might vary in ages, education and sporting backgrounds. This is because the traditional approach typically treats the audience as passive listeners of scientific facts and explanations rather than seeking to engage them as active participants. A shortcoming of a traditional approach is that it doesn't usually cater for the different learning styles and cognitive abilities of the athletes, coaches, and other people who make up the audience. Thus a traditional approach to basic sport medicine education would emphasize knowledge over participation and authentic scientific facts over subjective personal understandings.

In contrast, an alternative approach to sports medicine education would consider all of the above conditions. Moreover, it would give a high priority to the personal experiences that adolescent athletes have previously had with sport medicine. That is, it would use the observation that successful participation in sport builds individuals who are physically and socially confident and competent. It would then use this observation to encourage young athletes to talk about their personal experiences with sporting injuries, growth-spurt conditions, and their overtraining and overreaching experiences. Thus an alternative approach to delivering basic sport medicine education would aim to talk with these adolescent athletes rather than just talking at them. A strength of this alternative approach is that the adolescent athletes and their families, friends, and coaches are invited into co-presenting the sport medicine presentation by sharing their personal experiences. This provides a chance for the talk to become more personal and immediately meaningful in the lives of athlete-families living in north-west NSW. It also enables those scientific features that are selected for the talk to be displayed in a more concrete and practical way for adolescent athletes and their families to understand. However a shortcoming of doing this is that some sport medicine information and current research evidence may be excluded from a presentation. This is because it is judged as not having the potential for generating strong practical links with an audience.

So these preliminary considerations were prominent in discussing and planning the RACE sport medicine program. And we responded by inverting the traditional approach that privileges the biophysical foundations of human movement and the expertise of the sport psychotherapist ahead of the personal experiences of NIAS athletes. Instead we began by elevating the expertise and experiences of the adolescent athlete and his or her family with sports injury, rehabilitation, prevention, and recovery practices to being equal with the knowledge and experience of the sport physiotherapist. Thus we were able to move from talking to a passive audience to talking with active participants in our sport physiotherapy presentations. In doing so we developed and delivered a sport medicine program that was interested in what the athletes' know rather than just being concerned with what the physiotherapist knows. Three of the key milestones in developing this alternative approach are displayed below.

Firstly, sport physiotherapist, Warren Ansell, and NIAS Executive Officer, Peter Annis-Brown, worked together to develop some activities that would be engaging to young people and their friends and family who would be attending the NIAS sport medicine presentations. These activities were based on active learning principles (Pike, 1989), and treated sport medicine as something that was done by athletes and their families rather than something that was simply listened to in a static presentation.

Secondly, Ansell chose a number of generic sports stretches that could be used for warm-up, warm-down, and recovery that used everyday objects (i.e., chairs, tables, ironing-boards) rather than expensive or specialist equipment. The idea behind this was that these activities then became equally as relevant

to do at home as they are to do at a stadium or training venue. These stretches were connected with everyday items by participants actually performing them during the sport physiotherapy presentation. Consequently, Ansell used a number of these objects as props in his sport medicine presentation. NIAS sport physiotherapy was an active presentation, and so athletes as well as their parents, friends, and family members were expected to perform, learn, and feel these stretches, first hand. This followed on from our view that if NIAS athletes were to adopt a new sport practice or change their behaviour then they needed the support and assistance of their families and friends to help form a new habit. One unique feature of this was to imbed active learning practices into the presentation. This NIAS sport physiotherapy deliberately engaged athletes, coaches, and their families and friends at a tactile and proprioceptive level rather than solely at a visual and auditory level. This uses recommendations from the Australian Institute of Sport that recommends maximising athlete learning by tailoring information to their preferred learning styles (Farrow, Hall, & Diment, 2004).

Thirdly, Ansell developed a basic Powerpoint presentation on preventing sports injuries and recovery. However he marked this presentation for sometimes restless adolescent athletes by making it fun, hands-on and interactive. This was accomplished by mixing the personal knowledge that was generated from the anecdotes and personal narratives told by athletes and parents with the scientific knowledge found in the current sport medicine literature. While we acknowledge that this alternative approach is not unique and that it may be familiar to many sport physiotherapists and allied health professionals, we find that this familiarity does not often translate into action-based and interactive sport medicine presentations. So one unique initiative developed in the NIAS sport physiotherapy program was to institutionalise active learning as a mainstream practice in RACE sport medicine.

To close this brief illustration of how we developed a basic sport medicine program for country athletes, Table 4 displays some of the conceptual, technical, and service delivery innovations developed for the RACE sport physiotherapy program.

Table 4: Conceptual, Technical and Service Delivery Innovations in the NIAS RACE Sport Physiotherapy.

Innovations	From Traditional	To Alternative
Conceptual	Abstract Facts Scientific	Concrete Experience Personal
Technical	Powerpoint Specialist equipment Visual, Auditory	Proprioception Common objects Multiple-learning styles

Service  
Delivery

Squads  
Weekends  
Athletes  
Talking-to

Towns  
Evenings  
Families  
Talking-with

## Conclusion

What are the professional and practical implications of our work with regional, rural and remote athletes in NSW? What might readers make of this paper? We suspect that there are many points of interest, agreement, and disagreement in our paper. This is partly explained by the surprising absence of discussion and direction on how to provide sport science and sport medicine services to country athletes in the contemporary professional literature. So we will not close this paper by anticipating what readers have treated as significant in our work and then focus on these points in our conclusions. Instead we propose to close this paper by displaying some of the things that we have learned from our experiences working with regional, rural, and remote athletes and their families. This sidesteps making explicit comments about how our work might be used to help adolescent athletes living in other regional, rural and remote locations. However we prefer to talk cautiously and implicitly about these things. Instead we prefer to generate discussion about these things rather than make explicit recommendations for the future.

Firstly, we have learned that innovation in sport does not necessarily mean adopting practices that have been designed in large institutions based in Sydney, Melbourne, or Brisbane, and then implementing them in a small country town. This is not innovation in sport science and sport medicine service delivery. Moreover, real sport science and sport medicine innovation can be accomplished by dedicated professionals working closely with those people who are experiencing the problems and who are expected to benefit from any education or intervention program.

We are particularly proud to have developed NIAS RACE using the knowledge, experiences and expertise of local people living in north-west NSW. In our NIAS experience, simply implementing practices that have been designed in metropolitan centres with little consideration of how these practices are experienced in regional, rural and remote NSW did not provide a best solution for NIAS athletes, coaches, and their families. Our original NSWIS model, reinforced with information from the contemporary sport science and sport medicine literature, was inadequate for the needs of NIAS athletes and their families. It did not present a best practice approach to introducing regional, rural, and remote athletes to basic sport science and sport medicine. This is our most significant learning point from working on the NIAS RACE program.

Secondly, we learned that any meaningful steps to making sport science and sport medicine accessible to regional, rural, and remote athletes and their families and communities involves changes at a conceptual, technical, and service delivery level. It seems incongruent to physically bring sport science and sport medicine to a local country town and yet still present it in an orthodox or traditional manner. That is,



presenting it as something more relevant to elite athletes living in a major city than adolescent athletes, and their coaches and families living in small country towns in northwest NSW. So, in our view, it is necessary to change conceptual and technical features to accompany any service delivery changes to combat inadvertently making this substantial error.

In closing, we hope that our experience has been interesting and informative. We hope that some of our views will help sport professionals to consider regional, rural and remote adolescent athletes in a different way in the future. And perhaps begin working for regional, rural, and remote athletes by interacting with the people who are experiencing the problems and who are expected to benefit from any changes or interventions.

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### Additional Information

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